

WHAT IS CLAIMED IS:

1 1. A method for enhancing REM sleep in a subject, which method
2 comprises exposing a non-ocular region of a subject to photic stimulation for an interval
3 during a sleep period.

1 2. The method according to claim 1, wherein enhancing REM sleep
2 comprises increasing the number of minutes spent in REM sleep during the interval of
3 photic stimulation.

1 3. The method according to claim 2, wherein the number of minutes in
2 REM sleep increases by at least about 30%.

1 4. The method according to claim 2, wherein the number of minutes in
2 REM sleep increases by at most about 200%.

1 5. The method according to claim 1, wherein enhancing REM sleep
2 comprises increasing the frequency of REM periods during the interval of photic
3 stimulation.

1 6. The method according to claim 5, wherein the frequency of REM
2 periods increases by about 40%.

1 7. The method according to claim 1, wherein the non-ocular region is a
2 region of ample surface vasculature.

1 8. The method according to claim 7, wherein the region of ample
2 surface vasculature is the popliteal fossa.

1 9. The method according to claim 1, wherein the interval lasts for a
2 duration ranging from between about 15 minutes to about 12 hours.

1 10. The method according to claim 9, wherein the duration is about
2 three hours.

1 11. The method according to claim 1, wherein the photic stimulation
2 has an intensity ranging from about 15 lux to about 150,000 lux.

1 12. The method according to claim 11, wherein the photic stimulation
2 has an intensity ranging from about 10,000 lux to about 13,000 lux.

1 13. The method according to claim 1, wherein the photic stimulation
2 has a bandwidth in the visible spectrum.

1 14. The method according to claim 13, wherein the photic stimulation
2 has a bandwidth between about 455 nanometers (nm) and 540 nm.

1 15. The method of claim 1, which method further comprises enhancing
2 cognitive function in a subject.

1 16. The method according to claim 15, wherein the subject suffers from
2 a medical disorder in which mental status is compromised.

1 17. The method according to claim 15, wherein the subject is a normal
2 individual.

1 18. The method according to claim 15, wherein cognitive function is
2 enhanced to a degree comparable to that achieved with a cholinergic agonist.

1 19. A method for extending a REM cycle of a person, comprising the
2 steps of:

- 3 a) sensing the start of the REM cycle;
4 b) sensing the end of the REM cycle;

- 5 c) determining the time interval of the REM cycle; and
- 6 d) augmenting the time interval of the REM cycle by selectively providing
- 7 non-ocular photic stimulation for a predetermined interval.

- 1 20. An article for extending a REM cycle of a person, comprising:
- 2 a) a sensor which provides phasic activity signals;
 - 3 b) a timing circuit connected to the sensor and outputting an elapsed-interval
 - 4 signal indicative of the magnitude of the REM cycle;
 - 5 c) a comparator which compares the elapsed-interval signal to a
 - 6 predetermined-interval signal and outputs a shortfall signal;
 - 7 d) a controller responsive to the shortfall signal to generate a control signal;
 - 8 e) a photic stimulator positionable in contact with the person's skin and being
 - 9 actuated in response to the control signal.

- 1 21. The article as in claim 20, wherein the controller further generates
- 2 an update signal which is provided to the comparator as the predetermined-interval signal
- 3 during a subsequent REM cycle.